FACT SHEET
Grays Harbor Paper, LP Permit Number WA 000307-7
Modification to NPDES Permit

The Department of Ecology (Ecology) received an application on March 7, 2006 requesting modification of the Grays Harbor Paper, L.P. (GHP) National Pollutant Discharge Elimination System (NPDES) permit (WA 000307-7). The modification would allow GHP to receive, treat, monitor, and discharge wastewater from Ocean Protein, LLC (OP) -- a nearby fish meal processing plant.

Description of the facility

Use History

The proposed permit would allow OP to discharge wastewater generated from its fishmeal plant to the GHP wastewater treatment system, both located on the former site of the Rayonier, Inc. (Rayonier) pulp mill. The area where the OP fish waste processing facility is located formerly housed Rayonier's vanillin plant. The vanillin plant processed Rayonier's spent sulfite liquor into flavoring and it discharged wastewater to Rayonier's sewer via an overhead pipe, where it mixed with the wastewater from the pulp and paper mill. The pumping station sent the combined wastewater into the activated sludge wastewater treatment system.

Rayonier's activated sludge wastewater treatment system was designed to treat the wastewater from the pulp mill, the paper mill, and the vanillin Plant. The wastewater treatment system was designed with a capacity to treat 170,000 pounds of biochemical oxygen demand (BOD) with a flow of 30 million gallon per day (MGD). After the pulp mill shut down in 1992, an investment group started GHP to operate only the paper mill portion.

Ocean Protein's existing temporary permit (ST-6204) allows OP to discharge low strength wastewater into the City of Hoquiam's wastewater treatment system. The proposed permit modification would allow OP to discharge all streams except its "press water" to the GHP treatment system. "Press water" is the name for wastewater collected after the fish has been cooked and pressed. OP's process usually evaporates the press water and adds it back to the fishmeal line before drying.

The main reasons for changing Ocean Protein's discharge location are: (1) GHP's wastewater treatment system was designed to handle larger flows and higher ammonia loads than can the City of Hoquiam system. Given that greater capacity, air pollution control scrubbers can operate at higher flow rates, thereby producing cleaner exhaust gases, than discharging into the City of Hoquiam's system could do. Thus, less odor will emit from OP's discharge site. (2) The City of Hoquiam's system was not designed to handle waste streams with high ammonia content. But the GHP system can treat ammonia so long as loading to the system is stable. [OP's press water would not be allowed into GHP's treatment system because of the press water's potential to cause an excess load of ammonia.] (3) GHP's wastewater treatment system has unused capacity, while the City's system operates at capacity.

Industrial Processes

Ocean Protein uses primarily Pacific whiting and sardine wastes supplied by fish processing plants. OP processes those wastes into fish meal, fish bones, and fish oil. The OP plant has two separate production lines. They operate only during the season for these fish species - beginning in May and ending in early October. During this time OP's plant discharges wastewater generated from processing the fish waste or fish offal. ("Offal" refers to the residual parts left after processing the catch into food for humans.)

The offal arrives at OP's site in end-dump trailers that off-load into the receiving bin located in the main plant. The waste is transferred from the bin into one or two fish storage tanks that feed the offal into steam cookers. Steam cooking coagulates the solids, allowing separation of the solids from the liquid. During the cooking process fat cells rupture and the resulting oil collects with the other liquid phase. A screw press separates the solids from the liquids. The solids are called "press cake." The liquid is called "press water."

OP dries the press cakes from about 50% moisture to about 5% to 10%. OP mills and screens the solids after drying them, to separate the fish meal from the bones (for separate packaging and sale as distinct products). The press water routes to a tricanter where a three-phase centrifuge removes solids; they are sent back to the fishmeal line. The liquid phase is separated into oils and water; the oils are packaged and sold as a commercial product.

Evaporators use heat from the dryer exhaust to concentrate the water portion; the concentrate is commonly called "stickwater." Ocean Protein pumps stickwater from the bottom of the first evaporator to the top of the next evaporator, and then the stickwater from the bottom of the second evaporator into the top of a third evaporator. Vacuum pumps lower the boiling point of the stickwater. The final evaporator discharges concentrated stickwater into the fishmeal processing line before the meal goes into the dryer. This process enables the plant to capture additional solids and oils.

Under this permit modification the evaporator condensates will discharge into the GHP wastewater treatment system via an overhead force line, mixing with other wastewater. When GHP took possession of the facility, it removed a line (stainless steel pipe) that had carried waste from the vanillin plant to the Rayonier wastewater treatment system, but GHP will re-install the line to transport OP's wastewater. The proposed permit will not allow OP to discharge its press water into the GHP system. Instead, the press water will be handled as described above, unless the evaporators are down. During evaporator down time OP must collect, isolate, and find another method of treatment for its press water.

Wastewater Treatment Study

The wastewater treatment system could take occasional high BOD loading when the pulp mill was operating, because the mixed liquor suspended solids (MLSS) were held in the range of 1,800 ppm (±). Operating at the MLLS concentration results in a very large biomass in the secondary treatment system, and creates a corresponding oxygen level that provides a large cushion for BOD loading. The present system, with Grays Harbor Paper's BOD daily loading of 4,400 to 6,000 lbs., keeps the MLSS in the few hundred parts per million range, i.e. 100-200 parts per million (ppm). But Ecology questions whether the system could

withstand so large a shock load - particularly with respect to BOD, fish oils, and ammonia-like compounds – that would occur if OP discharged press water into the system.
At present the GHP wastewater treatment system flow of 5 to 15 million gallons per day (MGD) shows very little nitrogenous compounds content. CH2M Hill engineering company performed a study to determine how the GHP treatment system would react to OP's discharge. The study concluded the BOD and ammonia discharged into the GHP treatment system from the OP system would be effectively treated if the dissolved oxygen content of the aeration basin was held between 3 and 4 ppm and if press water was not discharged into the treatment system. Sometimes OP's processing evaporators go down and the process can't capture the oils and solids. If the evaporators fail, OP can't discharge the press water into GHP's treatment system.

The modified GHP permit will contain a best management plan (BMP) that describes operation of the aeration basin blower system to maintain a dissolved oxygen level between 3 and 4 ppm at all times. The prescribed dissolved oxygen level would induce nitrification of the ammonia- and nitrogen-containing compounds, according to CH2M Hill engineering analysis conducted at the request of GHP.

GHP currently operates a Turblex blower at about 50 percent capacity, to aerate the basin in zones. If more air is needed to maintain the desired oxygen level, GHP has the ability to increase the capacity of the Turblex blower to full or near 100 percent, or to operate another backup blower (a very large Hoffman blower) capable of supplying additional air. GHP could also re-circulate secondary effluent through the primary clarifier to reduce the risk of anaerobic conditions developing in the primary clarifier and causing odor when OP's wastewater is introduced into the treatment system. According to CH2M Hill's engineering report, the GHP treatment system is capable of treating OP's wastewater to an acceptable level so long as no press water is introduced.

Early in 2006, Grays Harbor Paper ran a pilot wastewater treatment plant to test how GHP's regular system would handle OP's wastewater. The test used OP wastewater from the past season because the plant shuts down off season. The pilot treatment plant consisted of primary and secondary treatment units. Each unit was a 300 gallon heated, insulated tote bin. Wastewater flows from the GHP and the OP processes were proportioned to represent the loading on GHP's wastewater treatment system during inflow of both facilities' wastewater. Those test runs measured both ammonia and total Kjeldahl nitrogen (TKN) in effluent from the primary treatment unit and in effluent from the secondary treatment unit.

Data collected from February 10, 2006 to March 2, 2006 showed a range for the reduction of ammonia to be from 96.4 % to 98.8 % and for the reduction of TKN to be from 47.4 % to 72.2 %. The data confirmed CH2M Hill's conclusions that GHP's wastewater treatment system would remove almost all of the ammonia. BOD is not an issue since the Grays Harbor Paper mill's wastewater treatment system is under loaded for BOD. Neither is TSS an issue, because the GHP treatment system has primary treatment, followed by a secondary activated sludge treatment with secondary clarification. These treatments minimize the occurrence of BOD or TSS in the wastewater. Therefore Ecology placed no BOD or TSS limits in the proposed permit.

Engineering Report

On January 12, 2006, Ecology received a Technical Memorandum from CH2MHill, through GHP. The memorandum, titled "Evaluation of Grays Harbor Paper, LP Secondary Treatment System to Accept Ocean Protein, LLC Wastewater," stated:

Given the excess capacity at Grays Harbor Paper's wastewater treatment plant, and Ocean Protein's location on the former Rayonier vanillin plant site (adjacent to and north of the paper mill), OP approached GHP to consider treatment of OP's wastewater. OP's operations are seasonal, from May to October. OP's wastewater consists primarily of condensate from stick water evaporation and fish meal drying operations. Characterization information provided by OP indicates that the wastewater contains readily biodegradable organics, organic nitrogen compounds, and ammonia, and it is expected to be compatible with treatment of the GHP effluent. The addition of ammonia could be beneficial, as paper mill wastewaters contain less than quantities of nitrogen necessary for optimum treatment efficiency.

Throughout February of this year, GHP ran a pilot plant to test how their wastewater treatment system would treat the OP wastewater. The pilot plant used OP wastewater from the past fishing season since the plant was shut down during the test period. The pilot plant consisted of primary and secondary treatment units. Each unit was a 300 gallon heated insulated tote bin. The wastewater flows from GHP and OP were portioned to reproduce the combined operations' wastewater. Tests measured ammonia and Total Kjeldahl Nitrogen from the primary treatment unit, and the effluent from the secondary treatment unit. No metals were detected in the OP wastewater.

The data collected from February 10, 2006 through March 2, 2006 showed a reduction of ammonia ranging between 96.4 and 98.8 percent and a reduction of TKN ranging between 47.4 and 67.4 percent. These data confirmed the CH2M Hill conclusions that GHP's wastewater treatment system would remove almost all of the ammonia. BOD is not an issue since the mill's wastewater treatment system is under-loaded for BOD. TSS is also not an issue because the GHP treatment system provides primary treatment followed by a secondary activated sludge treatment with secondary clarification. Ecology will place neither BOD nor TSS limits in GHP's NPDES permit modification.

Permit Limits

Ecology derived NPDES permit limits based upon the amount and type of paper GHP produces, and the Federal Effluent Guidelines from 40 CFR Part 430.182 Subpart R (Wood fiber furnish subdivision). The table below shows the current limits that the federal Environmental Protection Agency (U.S. EPA) applies to wood fiber furnish:

EFFLUENT LIMITATIONS: OUTFALL # 001		
Parameter	**Average Monthly[a]**	**Maximum Daily[b]**
pH[c]	Daily minimum is equal to or greater than 5 and the daily maximum is less than or equal to 9.	

Biochemical Oxygen Demand	3,900 Lbs./day	7,600 Lbs./day
Total Suspended Solids	5,500 Lbs./day	10,200 Lbs./day
Fecal Coliform	9,600 #/100 mL	19,200 #/100 mL[d]

EFFLUENT LIMITATIONS: OUTFALL # 002		
Parameter	**Average Monthly[a]**	**Maximum Daily[b]**
Total Suspended Solids	1,500 Lbs./day	3,000
pH[c]	Daily minimum is equal to or greater than 5 and the daily maximum is less than or equal to 9.	

[a] The average monthly effluent limitation is defined as the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

[b] The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.

[c] Indicates the range of permitted values. When pH is continuously monitored, excursions between 4.0 and 5.0, or 9.0 and 10.0 shall not be considered violations provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 26 minutes per month. Any excursions below 4.0 and above 10.0 are violations. The instantaneous maximum and minimum pH shall be reported monthly.

[d] With no more than 10 percent exceeding 19,200 #/100 mL

A secondary activated sludge wastewater treatment system normally removes 85 to 95 percent of the influent BOD_5 and TSS. The mass load for TSS (from OP) is very small; therefore Ecology will give no additional allowance to GHP for the TSS. The mass loading of BOD_5 is large enough to leave measurable BOD_5 in GHP's effluent after treatment. Based on the treatment efficiency noted above, Ecology will allow an additional 10 % of the projected OP mass loading of BOD_5 (taken from the engineering report conducted by CH2M Hill for GHP) to GHP's current daily maximum and monthly average BOD_5 mass limits in the existing permit. All other limits remain the same. The BOD_5 limits in the proposed permit will be:

EFFLUENT LIMITATIONS: OUTFALL # 001		
Parameter	**Average Monthly**	**Maximum Daily**
Biochemical Oxygen Demand	4,000 Lbs./day	7,800 Lbs./day

Ecology will place a condition in the NPDES permit modification to confirm the efficiency of Grays Harbor Paper's treatment system with the addition of OP's wastewater. Ecology will also require that GHP prepare a Best Management Plan to determine the optimum level of dissolved oxygen required to remove ammonia in the aeration basin.

Attachment 1

Public Notice

The Department of Ecology proposes to modify the existing National Pollutant Discharge Elimination System Permit we issued to Grays Harbor Paper, L.P. (GHP) April 16, 2003. The proposed permit contains only those conditions and limitations related to a modification that would allow Ocean Pacific, L.L.C. to discharge its treated fish offal processing wastewater into GHP's wastewater treatment system.

The Department will publish a Public Notice about the proposed modification on March 29, 2006 in Aberdeen's newspaper, *the Daily World*. Ecology will also send the Notice via electronic mail and postal mail to a list of interested people. The Notice will inform the public when to find a printed copy of the proposed Permit Modification and Fact Sheet at the Hoquiam and the Aberdeen Branches of the Timberland Library System, or how to access them from our web site. The Notice will invite people to send written comments about the proposal during the Public Comment Period from March 29, 2006 until the close of business on April 28, 2006.

Send written comments to:

Don Nelson
Industrial Section
Department of Ecology
P. O. Box 47706
Olympia, WA 98504-7706

Or deliver written comments to:

Don Nelson
Industrial Section
Department of Ecology
500 Desmond Drive
Lacey, WA 98503

Any interested party may comment on the draft permit or request a public hearing of concerns about the Conditions proposed in the modification. Ecology must receive any request for Public Hearing within the thirty (30) day Comment Period at either address above. The request for a hearing must describe the interest of the requesting party and state reasons why the hearing is warranted. Ecology will schedule a hearing about the proposed permit modification, upon learning of significant public interest in the proposal (WAC 173-220-090). Ecology will issue a Public Notice regarding any hearing about the proposed permit modification at least thirty (30) days in advance of the scheduled event. The Department will mail an individual Notice of Hearing (WAC 173-220-100) to anyone who expressed an interest in this permit.

Comments should refer to specific text, should explain each concern, and should offer an alternative when possible. The comments may address technical issues, accuracy and completeness of information, the scope of coverage or adequacy of environmental protection, or any other issue that would result from allowing this permit modification. The Department will consider the merit of each comment received within the thirty (30) days Public Comment Period, in forming a final decision to issue, revise, or deny the permit. Ecology will send a copy of the final NPDES Permit Mod, along with a response to all significant comments, to people expressing an interest in this permit.

For further information about this proposal, telephone Don Nelson at (360) 407-6940 in Lacey, or send an e-mail enquiry to him at: dnel461@ecy.wa.gov

Response to Comments

Received from: Steve Eberl, David Knight, Bob Martin, Frank Meriwether, and Craig Zora

Facility Outfalls

Comment 1:

Do both outfalls have diffusers?

Response 1:

Both outfalls have single discharge ports.

Sediment

Comment 2:

Both outfall 0001 and 002 are leased from the DNR. Would DOE recommend sediment sampling at both locations before this permit mod is approved? One lease, 20-010852, expires on 8/1/06.

Response 2:

Not at this time, the permit modification is limited to GHP's ability to treat the wastewater. While writing the permit and factsheet in 2003, we considered the impacts on sediment. In GHP's permit application, the company tested those chemicals required for paper mills. The tests detected no chemicals that would cause a sediment problem. Nor did Ocean Protein's sampling for its permit application detect the chemicals that indicate a new sediment study would be necessary.

Comment 3:

When there is added sediment loading will the effluent be dispersed without settling?

Response 3:

We don't expect Ocean Protein's discharge into GHP's wastewater treatment system to increase the sediment load. Both outfalls have single discharge ports. Outfall 001 gives a dilution ratio of 96:1 at the edge of the chronic mixing zone. Outfall 002 discharges fresh water overflow and filter backwash.

We may decide to require GHP to conduct dilution modeling on outfall 002, if we renew and issue the permit during calendar year 2008 when the permit holder must reapply.

(continued on next page)

Fecal Coliform and Oysters

Comment 4:

Right now the permit calls for a fecal coliform sample once per month. Now that there is a significant organic load coming in I wonder if there may be an indirect (like re-growth or incubation) fecal coliform presence in the WWTP.

Response 4:

Extra organic loading will only improve the operations of the treatment system. GHB's wastewaters treatment plant was designed to process 170,000 lbs BOD/day. OP's discharge will only add 1100 lbs BOD/day. The host treatment plant may see the MLSS value increase to a small extent. I don't think the combined effluent will show an increase in fecal coliform since the line to the discharge point into Grays Harbor is only 2-300 feet. The situation differs from the Weyerhaeuser - Cosmopolis, i.e. where their discharge line is measured in miles. We don't expect any fecal coliform problems at the wastewater treatment plant.

Comment 5:

If the DOH orders oyster beds closed to harvesting how will damages be assessed? There is the possibility this could occur.

Response 5:

If the company violates permit discharge limits, Ecology may assess a daily penalty of up to $10,000 per violation. Grays Harbor Paper has never violated the fecal limit in its permit.

Comment 6:

Will approval of this modified permit result in more Department of Health oyster harvesting closures for Central Bay of Grays Harbor?

Response 6:

No, we expect none. Grays Harbor Paper LP has never violated the fecal limit in its permit.